CLAIMS

What is claimed is:

1. A system for rendering an image on a target device from a contone image, the system comprising:

    a color space converter that generates target device contone image data from input contone image data;

    a print engine for applying colorants to media in response to compensated target device contone image data; and

    a total ink compensating stage for modifying the target device contone image data by limiting colorants applied to the media based on a total ink constraint while providing a one-to-one mapping between each possible input contone image data value and each possible compensated target device contone image data value to thereby produce compensated target device contone image data.

2. A system as claimed in claim 1, wherein the color space converter converts contone red, green, blue data to contone cyan, magenta, yellow, black data.

3. A system as claimed in claim 1, wherein the print engine is an ink jet printer.

4. A system as claimed in claim 1, wherein the print engine is a laser printer.

5. A system as claimed in claim 1, wherein the total ink compensating stage provides the one-to-one mapping between each possible input contone image data value and each possible compensated target device contone image data value using a bijective function.

6. A system as claimed in claim 1, wherein the total ink constraint limits only a subset of the colorants used by the print engine.

7. A system as claimed in claim 1, wherein the total ink compensating stage is embedded in an print driver.

8. A system as claimed in claim 1, further comprising a halftoning stage for converting the compensated target device contone image data into target device halftone image data.

9. A method for rendering an image at a target device from a contone image, the method comprising:

    receiving input contone image data;

    converting the input contone image data to target device contone image data;

    generating compensated target device contone image data in which colorants applied to the media are limited based on a total ink constraint while providing a one-to-one mapping between each possible input contone image data value and each possible compensated target device contone image data value;

    converting the compensated target device contone image data into target device halftone image data; and

    applying the colorants to media in response to the halftone image data.

10. A method as claimed in claim 9, wherein the step of converting the input contone image data to the target device contone image data comprises converting contone red, green, blue data to contone cyan, magenta, yellow, black data.

11. A method as claimed in claim 9, wherein the step of applying colorants to the media comprises applying ink with an ink jet printer.

12. A method as claimed in claim 9, wherein the step of applying colorants to the media comprises applying toner with a laser printer.

13. A method as claimed in claim 9, wherein the step of generating the compensated target device contone image data comprises mapping each possible input contone image data value to each possible compensated target device contone image data value using a bijective function.

14. A method as claimed in claim 9, wherein the step of generating the compensated target device contone image data comprises limiting only a subset of the colorants used by a print engine.

15. A method as claimed in claim 9, further comprising performing the step of generating the compensated target device contone image data in a print driver.

16. A method for converting image data for rendering an image, the method comprising:

receiving input image data;

converting the input image data to target device image data; and

generating compensated target device image data in which colorants applied to the media are limited based on a total ink constraint while providing a one-to-one mapping between each possible input image data value and each possible compensated target device image data value.

17. A method as claimed in claim 16, wherein the step of converting is performed by color correction software.

18. A method as claimed in claim 16, wherein the input image data are converted to a CMYK color space of a printer.

19. A method as claimed in claim 16, further comprising:

converting the compensated target device image data into target device halftone image data; and

applying the colorants to media in response to the halftone image data.

20. A method as claimed in claim 16, further comprising:

applying an inverse of the one-to-one mapping between each possible input image data value and each possible compensated target device image data value applied in the step of generating thecompensated target device image data to generate decompensated target device image data; and

converting the decompensated target device image data to a different color space.

21. A method as claimed in claim 20, wherein the step of applying the inverse is performed as part of a soft-proofing process.

22. A method as claimed in claim 16, wherein the step of generating the compensated target device image data comprises mapping each possible input image data value to each possible compensated target device image data value using a bijective function.